

# FISHES OF PARAMBIKULAM WILDLIFE SANCTUARY, PALAKKAD DISTRICT, KERALA<sup>1</sup>

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(With one text-figure)

**Key words:** Parambikulam Wildlife Sanctuary, fish diversity, conservation measures.

A survey was conducted from December, 1996 to May, 1997 to document the freshwater fishes of Parambikulam Wildlife Sanctuary. Fishes were collected from 15 main localities and 15 subsites, using cast nets, gill nets and scoop nets. A total of 40 species of 12 families were collected. *Osteochilichthys longidorsalis*, *Barilius bendelisis* and *Glyptothorax lonah* are the important species recorded. The major threats to the fish fauna and recommendations for their conservation have been given.

## INTRODUCTION

The hill streams and other water bodies located in the Western Ghats are rich in fish fauna. Of the 930 species of fish recorded in the lentic and lotic fresh waters of India, 168 are found in the Western Ghats (Singh, 1993). To conserve this fish diversity, special consideration should be given to freshwater bodies originating from Western Ghats. Pillay (1929), John (1936), Hora and Nair (1941) and Hora and Law (1941) reported the freshwater fishes of Kerala, especially from the Travancore region. This survey was conducted from December 1996 to May 1997 to document the freshwater fishes of Parambikulam Wildlife Sanctuary.

## Physiography

Parambikulam Wildlife Sanctuary lies in a valley between Anaimalai and Nelliampathy hill ranges located in Palakkad district of Kerala, lying between 10° 20'-10° 32' N lat. and 76° 35' - 76° 5' E long. In 1973, 285 sq. km area of the Parambikulam valley was notified as a Wildlife Sanctuary contiguous with the Anaimalai Wildlife Sanctuary of Tamil Nadu across the border. The hills are covered with tropical

evergreen and semi-evergreen forests along the western part of the sanctuary. Other vegetation types are moist teak bearing forests, South Indian moist deciduous forests and riparian fringing forests.

The main drainage systems in this Sanctuary include the rivers Karappara, Parambikulam and Thekkadiyar and their tributaries. The altitudes vary from 459 m to 1439 m above msl.

## METHODS

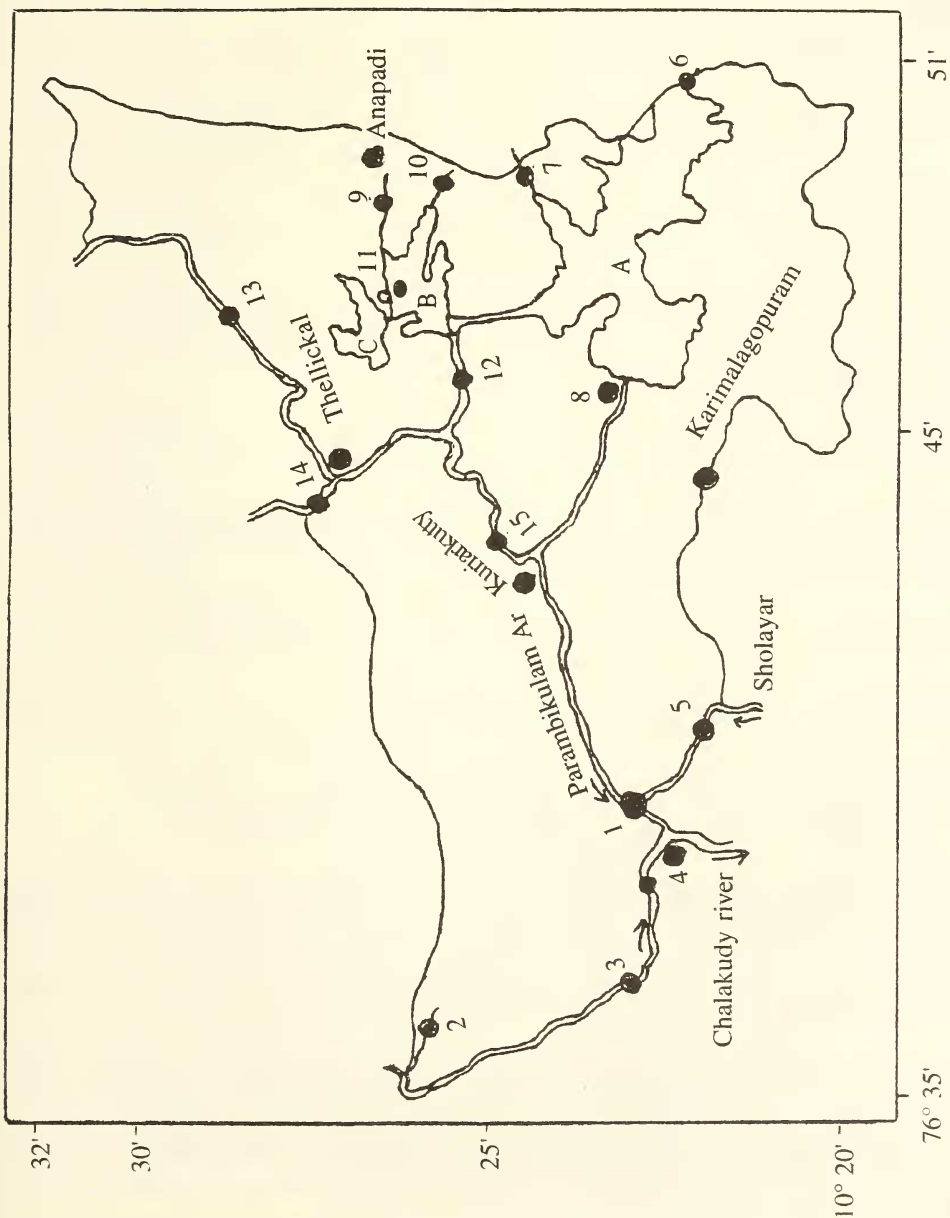
The study area was visited during December 1996 to May 1997, and fishes were collected from 15 main localities and an equal number of subsites (Fig. 1). Cast nets, gillnets and scoop nets of varying mesh size were used. Works of Jayaram (1981), Talwar and Jhingran (1991) and Menon (1987, 1992) assisted in identification. Survey of India toposheets (1: 50,000) were used for the identification of approachable areas and to find out the order of streams. Some physical and chemical parameters were also measured. To avoid sampling error, collection methods were almost similar in all the sites.

## RESULT AND DISCUSSION

The present survey indicates the richness of fish diversity in the drainage systems of Parambikulam Wildlife Sanctuary. A total of 40

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Collection sites (1-15)

1. Orukombankutty
2. Chakkali thodu
3. Karappara river
4. Karapparakutty
5. Orukomban
6. Panathiyar
7. Varagilyar
8. Parambikulam dam site
9. Kolikamathithodu
10. Sichali pallm
11. Sungam
12. Thunakadavuar
13. Thekkadyar
14. Thekkickalar
15. Kuriarkuttyar

- A. Parambikulam Reservoir
- B. Thunakadavu Reservoir
- C. Peruvarpallam Reservoir

Fig. 1: Map of Parambikulam wildlife sanctuary showing various collection sites

FISHES OF PARAMBIKULAM WILDLIFE SANCTUARY

TABLE I  
DISTRIBUTION OF FISHES IN DIFFERENT LOCALITIES IN PARAMBIKULAM WILDLIFE SANCTUARY

Species	Sites															t
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
FAMILY-ANGUILLIDAE																
1. <i>Anguilla bengalensis</i> (Gray)	1	-	-	-	-	-	-	1	-	-	-	-	1	-	-	3
FAMILY-CYPRINIDAE																
Sub family-Cyprininae																
2. <i>Puntius filamentosus</i> (Val.)	4	8	4	4	4	4	-	5	-	-	-	-	-	9	2	44
3. <i>Puntius carnaticus</i> (Jerdon)	8	2	5	-	-	-	6	9	-	-	3	-	4	2	4	43
4. <i>Puntius amphibiis</i> (Val.)	2	4	-	-	5	-	-	2	-	-	-	-	-	-	-	13
5. <i>Puntius melanampyx</i> (Day)	8	12	2	10	5	6	12	5	8	4	2	4	8	-	-	86
6. <i>Puntius sarana subnasutus</i> (Val.)	6	-	-	-	4	-	-	5	-	-	-	-	-	2	-	17
7. <i>Puntius chola</i> (Ham.-Buch.)	2	-	-	-	-	-	-	2	-	-	-	-	-	-	4	8
8. <i>Catla catla</i> (Ham.-Buch.)	2	-	-	1	1	-	-	12	-	-	-	1	-	-	-	17
9. <i>Cirrhinus mrigala</i> (Ham.-Buch.)	-	-	-	-	-	-	-	8	-	-	-	1	-	-	-	9
10. <i>Gonoproktopterus curmuca</i> (Ham.-Buch.)	4	2	-	2	2	-	-	7	-	-	-	8	-	12	5	42
11. <i>Labeo rohita</i> (Ham.-Buch.)	1	-	-	-	-	-	-	9	-	-	-	-	-	-	-	10
12. <i>Tor khudree</i> (Sykes)	8	3	3	3	6	5	4	3	-	-	2	3	-	8	3	51
13. <i>Osteochilichthys longidorsalis</i> (Pethiyagoda & Kottelet)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Sub family - Rasborinae																
14. <i>Barilius bakeri</i> Day	6	4	4	4	5	-	6	2	2	8	-	-	-	-	-	41
15. <i>Barilius bendelisis</i> (Ham.-Buch.)	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	6
16. <i>Barilius gatensis</i> (Val.)	4	2	-	6	3	-	8	5	-	-	10	2	6	-	-	46
17. <i>Danio malabaricus</i> (Jerdon)	8	3	8	3	6	7	6	6	4	-	5	-	18	-	-	74
18. <i>Esomus dauricus</i> (Ham.-Buch.)	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	8
19. <i>Parluciosoma daniconius</i> (Ham.-Buch.)	7	5	12	8	6	4	10	6	8	12	4	5	4	5	2	98
Sub family - Garrinae																
20. <i>Garra mullya</i> (Sykes)	8	6	4	10	6	6	5	6	3	-	2	1	8	11	7	83
21. <i>Garra surendranathanii</i> (Shaji et al.)	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Sub family - Baltorinae																
22. <i>Bhavana australis</i> (Jerdon)	-	-	-	-	2	-	8	-	-	-	-	-	-	-	-	10
23. <i>Travancoria jonesi</i> Hora	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	3
Sub family - Nemacheilinae																
24. <i>Nemacheilus guentheri</i> Day	2	4	3	-	3	-	-	-	-	-	-	-	-	-	-	12
25. <i>Nemacheilus triaangularis</i> Day	6	5	-	4	-	4	5	-	-	-	3	-	6	-	-	33
FAMILY - COBITIDAE																
Sub family - Cobitinae																
26. <i>Lepidocephalus thermalis</i> (Val.)	9	4	5	3	-	-	2	-	-	-	2	3	4	4	2	38

Collection sites— 1. Orukombankutty; 2. Chakkali thodu; 3. Karappara river; 4. Karaparakutty; 5. Orukomban; 6. Panathiyar; 7. Varagiliar; 8. Parambikulam dam site; 9. Kolikamathithodu; 10. Sicalhi pallam; 11. Sungam; 12. Thunakadavuar; 13. Thekkadiar; 14. Thellickalar; 15. Kuriarkuttiar; t - total number of specimens.

FISHES OF PARAMBIKULAM WILDLIFE SANCTUARY

TABLE I (contd.)

DISTRIBUTION OF FISHES IN DIFFERENT LOCALITIES IN PARAMBIKULAM WILDLIFE SANCTUARY

Species	Sites															t
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
FAMILY-BAGRIDAE																
27. <i>Mystus armatus</i> (Day)	2	1	-	-	1	-	4	-	-	-	-	1	-	-	-	9
28. <i>Mystus malabaricus</i> (Jerdon)	2	-	2	-	-	-	-	-	-	-	-	-	2	-	-	6
FAMILY-SISORIDAE																
29. <i>Glyptothorax lonah</i> (Sykes)	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	3
FAMILY-CLARIDAE																
30. <i>Clarias batrachus</i> (Linnaeus)	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2
FAMILY-APLOCHEILIDAE																
31. <i>Aplocheilus lineatus</i> (Val.)	10	-	-	4	2	1	8	2	-	-	3	2	-	4	3	39
FAMILY-NANDIDAE																
Sub family-Pristolepidinae																
32. <i>Pristolepis marginata</i> Jerdon	3	-	2	-	3	-	2	-	-	2	-	1	-	2	-	15
FAMILY-CICHLIDAE																
33. <i>Eetroplus maculatus</i> (Bloch)	8	2	4	6	4	-	-	5	-	-	-	-	-	-	2	31
34. <i>Eetroplus suratensis</i> (Bloch)	2	-	-	-	-	-	-	3	-	-	-	-	-	-	-	5
35. <i>Oreochromis mossambica</i> (Peters)	4	4	4	5	3	-	5	6	4	-	-	-	-	8	2	45
FAMILY-GOBIDAE																
36. <i>Glossogobius giuris</i> (Ham.-Buch.)	3	4	2	2	3	2	-	4	-	-	3	-	-	2	-	25
FAMILY-CHANNIDAE																
37. <i>Channa marulius</i> (Ham.-Buch.)	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	3
38. <i>Channa orientalis</i> (Bloch & Schneider)	-	-	2	-	1	-	-	-	1	-	-	-	-	-	-	4
FAMILY-MATACEMBELIDAE																
39. <i>Macrogonathus guentheri</i> Day	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	2
40. <i>Mastacembelus armatus</i> (Lacepede)	1	-	-	1	-	-	1	-	-	-	2	-	-	-	-	5
Total no. of species	32	18	19	17	22	9	12	23	7	4	14	13	11	12	11	-

Collection sites — 1. Orukombankutty; 2. Chakkali thodu; 3. Karappara river; 4. Karaparakutty; 5. Orukomban; 6. Panathiyar; 7. Varagiliar; 8. Parambikulam dam site; 9. Kolikamathithodu; 10. Sichali pallam; 11. Sungam; 12. Thunakadavuar; 13. Thekkadiar; 14. Thellickalar; 15. Kuriarkuttiar; t - total number of specimens.

species belonging to 12 families were collected from various localities (Table 1). Of these, 3 were culture fishes. Most of the species are widely distributed in Kerala and other parts of Western Ghats. *Garra mullya*, *Puntius melanampyx*, *Barilius gatensis*, *Parluciosoma daniconius*, *Danio malabaricus*, *Nemachellus triangularis* and *Lepidocephalus thermalis* were uniformly distributed in this Sanctuary. *Puntius carnaticus*, *Gonoproktopterus curmuca*, *Tor khudree*,

*Barilius bakeri*, *Esomus danricus*, *Nemacheilus guentheri*, *Mystus armatus*, *Clarias batrachus*, *Eetroplus suratensis*, *Channa marulius* and *Anguilla bengalensis* were comparatively rare. *Bhavana australis* and *Travancoria jonesi* were confined upstream in the Parambikulam river.

*Osteochilichthys longidorsalis* was recently discovered from the lower reaches of Athirapilly waterfalls, Chalakudy river (Pethiyagoda and Kottelet 1996) and collected

by us from Parambikulam river near Orukombankutty. This is the second report of this fish from the same river. *Garra surenranathanii* was collected from its type locality (Shaji *et al.* 1996). *Barilius bendelisis*, which has been reported only from the east flowing Pambar river in Kerala, was reported for the first time from a west flowing river system (Raju Thomas *et al.* 1998). *Glyptothorax lonah* collected from Karappara river was its first record in Kerala (Biju *et al.* 1998). *Tor khudree*, the Deccan Mahseer was well represented at almost all sites.

Freshwater fish diversity was very high (32 species recorded) in the Orukombankutty, the confluence of Karappara, Sholayar and Parambikulam rivers. This area had deep pools and ditches and the bottom was rocky or sandy in most parts. Hence special consideration should be given to protection of this habitat, as it harbours a large number of fish species.

Values of physical and chemical parameters varied with the change in the habitats. The temperature varied between 23°C-26.5°C and pH was 6.5-8.1. The value of dissolved oxygen was between 6 - 8.1 mg/l.

### Major Threats and Recommendations for the Conservation of Fish fauna

Anthropogenic alterations of the forest habitat cause great changes in rivers and their

fish fauna. Spreading of fish diseases, mainly due to pollution, is another threat facing the fish fauna. Due to these reasons, some groups of fishes have become rare and endangered. These fishes need immediate protection to save them from extinction. Some recommendations are:

1. A separate fish sanctuary should be established in the rivers flowing through this area.
2. Regular monitoring of water quality.
3. Existing suitable habitats should be protected from erosion and deterioration of water quality.
4. Further introduction of exotic fishes should stop.
5. Extensive use of traps, long lines and explosives should be curtailed.
6. River bank restoration should be started in damaged areas with suitable riparian vegetation in the Anaimalai and Nelliampathi hill ranges.

Though Parambikulam is a deemed sanctuary with very little human interference, the Orukombankutty area, with its highly diverse fish fauna, must be monitored to protect it.

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